

Docket No.: 1875.1004 (formerly 121.1053)

Serial No. 10/634,830

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~striketrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please AMEND claims 4-15 in accordance with the following:

1. (PREVIOUSLY PRESENTED) A method of driving a plasma display panel including a plurality of X electrodes and a plurality of Y electrodes arranged in alternating, spaced relationship on a base plate, and a plurality of address electrodes spaced from and crossing the X and Y electrodes, comprising:
 - generating initializing discharges with at least one ramp waveform voltage applied between the X electrodes and Y electrodes during an initializing period;
 - generating addressing discharges between the Y electrodes and the address electrodes during an addressing period; and
 - generating sustaining discharges between the X electrodes and Y electrodes during a sustaining period, said initializing period, said addressing period and said sustaining period cyclically recurring,

wherein the voltage of a driving waveform for each electrode satisfies the following relational expression:

$$2V_{AY} - V_{XY} \leq 2V_{AY} - V_{XY} - 2V_{\text{off}},$$

wherein V_{AY} denotes a discharge starting threshold voltage between the address electrodes and the Y electrodes, and V_{XY} denotes a discharge starting threshold voltage between the X electrodes and the Y electrodes, when the Y electrodes serve as cathodes,

wherein V_{AY} denotes a voltage applied between the address electrodes and the Y electrodes, and V_{XY} denotes a voltage applied between the X electrodes and the Y electrodes, at the trailing edge of the ramp waveform at the end of the initializing period, and

wherein V_{off} denotes an offset voltage of the voltage applied between the address electrodes and the Y electrodes at the end of the sustaining period.
2. (PREVIOUSLY PRESENTED) The method of driving a plasma display panel according to claim 1, wherein, when a driving waveform having two or more types of offset voltages V_{off} is used in the sustaining period, the plasma display panel is driven by setting the

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voltage of the driving waveform so as to satisfy the relational expression at the end of the sustaining period.

3. (PREVIOUSLY PRESENTED) The method of driving a plasma display panel according to claim 1, wherein, when a driving waveform having an alternating voltage with two or more types of amplitudes is used as a driving waveform to be applied between the address electrodes and the Y electrodes in the sustaining period, the plasma display panel is driven by setting the voltage of the driving waveform so as to satisfy the relational expression at the end of the sustaining period.

4. (CURRENTLY AMENDED) ~~A~~The method of driving a plasma display panel according to claim 1, wherein, when the address electrodes serve as a cathode, V_{tXY} denotes a discharge starting threshold voltage between the X electrodes and the address electrodes, and V_{tYA} denotes a discharge starting threshold voltage between the Y electrodes and the address electrodes,

when the X electrodes serve as a cathode, V_{tAX} denotes a discharge starting threshold voltage between the address electrodes and the X electrodes, and V_{tYX} denotes a discharge starting threshold voltage between the Y electrodes and the X electrodes, and

the plasma display panel satisfies the following relational expression:

$$V_{tAY} + V_{tXA} - V_{tXY} > 0 \text{ or}$$

$$V_{tYA} + V_{tAX} - V_{tYX} > 0.$$

5. (CURRENTLY AMENDED) A method of driving a plasma display panel including a plurality of Y electrodes arranged on a base plate, a plurality of X electrodes arranged between the plurality of Y electrodes, and a plurality of A electrodes crossing the X and Y electrodes, ~~the method providing in~~ a recurring cycle of an initializing period, an addressing period, and a sustaining period, the method comprising:

applying a ramp waveform in the initializing period; and

applying a sustaining pulse in the sustaining period to each of the X electrodes and the Y electrodes which includes an alternating pulse oscillating between both sides of a predetermined reference voltage, at least in the beginning portion of the sustaining period, and a pulse of a positive voltage based on the reference potential, at the end of the sustaining period.

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6. (CURRENTLY AMENDED) A method of driving a plasma display panel including a plurality of X electrodes and a plurality of Y electrodes arranged in an alternating, spaced relationship on a base plate and a plurality of address electrodes spaced from and crossing the X and Y electrodes, ~~the method providing in~~ an initializing period, an addressing period and a sustaining period, cyclically recurring, and comprising:

applying a ramp waveform in the initializing period; and

applying waveform to the address electrodes in the sustaining period which includes a constant voltage waveform of a negative voltage, based on a predetermined reference potential, at least at the end of the sustaining period.

7. (CURRENTLY AMENDED) ~~A~~The method of driving a plasma display panel according to claim 6, wherein the waveform applied to the address electrodes is a constant voltage waveform of negative voltage, based on the predetermined reference potential, applied during the entire sustaining period.

8. (CURRENTLY AMENDED) ~~A~~The method of driving a plasma display panel according to claim 6, wherein the waveform applied to the address electrodes includes a constant voltage waveform set at the level of the predetermined reference potential, at least in the beginning portion of the sustaining period, and a constant voltage waveform of negative voltage based on the reference potential, which is applied at the end of the sustaining period.

9. (CURRENTLY AMENDED) ~~A~~The method of driving a plasma display panel according to claim 7, wherein:

the reference potential is regarded as at a ground level, and

a sustaining pulse, applied to each of the X electrodes and the Y electrodes in the sustaining period, is an alternating pulse oscillating between both sides of the ground level.

10. (CURRENTLY AMENDED) ~~A~~The method of driving a plasma display panel according to claim 7, wherein:

the reference potential is regarded as at a ground level, and

a sustaining pulse, applied to each of the X electrodes and the Y electrodes in the sustaining period, is an alternating pulse of positive voltage based on the ground level.

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11. (CURRENTLY AMENDED) A method of driving a plasma display panel including a plurality of X electrodes and a plurality of Y electrodes arranged in an alternating, spaced relationship on a base plate, and a plurality of address electrodes spaced from and crossing the X and Y electrodes, ~~the method providing in~~ an initializing period, an addressing period and a sustaining period, cyclically recurring, ~~and the method comprising:~~

applying a ramp waveform in the initializing period; and

applying a waveform to the address electrodes in the sustaining period which includes a constant voltage waveform of a positive voltage, based on a predetermined reference potential, at least in a beginning portion of the sustaining period, and a constant voltage waveform, at the level of the reference potential, at the end of the sustaining period.

12. (CURRENTLY AMENDED) A method of driving a plasma display panel including a plurality of X electrodes and a plurality of Y electrodes arranged in an alternating, spaced relationship on a base plate, and a plurality of address electrodes spaced from and crossing the X and Y electrodes, ~~the method providing in~~ an initializing period, an addressing period and a sustaining period, cyclically recurring, ~~and the method comprising:~~

applying a ramp waveform in the initializing period; and

applying a waveform to the address electrodes in the initializing period which includes a constant voltage waveform of a positive voltage, based on a predetermined reference potential at the end of the initializing period.

13. (CURRENTLY AMENDED) ~~A~~The method of driving a plasma display panel according to claim 1, wherein the ramp waveform applied to at least one type of the X electrodes and the Y electrodes includes a first ramp wave having a positive ramp and a second ramp wave having a negative ramp.

14. (CURRENTLY AMENDED) ~~A~~The method of driving a plasma display panel according to claim 13, wherein, in the initializing period, a waveform including the first ramp wave and the second ramp wave is applied to the Y electrodes, and a constant voltage of opposite polarity corresponding to the first ramp wave and the second ramp wave is applied to the X electrodes.

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15. (CURRENTLY AMENDED) A method of driving a plasma display panel including a plurality of X electrodes and a plurality of Y electrodes arranged in an alternating, spaced relationship on a base plate, and a plurality of address electrodes spaced from and crossing the X and Y electrodes, ~~the method providing in~~ an initializing period, an addressing period and a sustaining period, cyclically recurring, ~~and the method comprising:~~

applying a ramp waveform in the initializing period; and

applying at least one of a voltage between the address electrodes and the Y electrodes at the end of the initializing period, a voltage between the X electrodes and the Y electrodes at the end of the initializing period, and an offset voltage of a voltage applied between the address electrodes and the Y electrodes at the end of the sustaining period, set at a predetermined level; and

producing two types of discharges, including a discharge between the X electrodes and the Y electrodes and a discharge between the address electrodes and the Y electrodes, at the end of the initializing period.

16. (PREVIOUSLY PRESENTED) A method of driving a plasma display panel including a plurality of X electrodes and a plurality of Y electrodes arranged in alternating, spaced relationship on a base plate and a plurality of address electrodes spaced from and crossing the X and Y electrodes, comprising:

generating initializing discharges with at least one ramp waveform voltage applied between the X electrodes and Y electrodes during an initializing period;

generating addressing discharges between the Y electrodes and the address electrodes during an addressing period; and

generating sustaining discharges between the X electrodes and the Y electrodes during a sustaining period, said initializing period, said addressing period and said sustaining period cyclically recurring,

wherein the voltage of a driving waveform for each electrode satisfies the following relational expression:

$$2V_{AY} - V_{XY} \leq 2V_{AY} - V_{XY} - 2V_{\text{off}}$$

wherein V_{AY} denotes a discharge starting threshold voltage between the address electrodes and the Y electrodes, and V_{XY} denotes a discharge starting threshold voltage

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between the X electrodes and the Y electrodes when the Y electrodes serve as cathodes,

wherein V_{AY} denotes a voltage applied between the address electrodes and the Y electrodes, and V_{XY} denotes a voltage applied between the X electrodes and the Y electrodes at the trailing edge of the ramp waveform at the end of the initializing period,

wherein V_{off} denotes an offset voltage of the voltage applied between the address electrodes and the Y electrodes at the end of sustaining period, and

wherein during the at least one ramp waveform voltage applied to the Y electrode during an initializing period, a voltage opposite to the ramp waveform voltage is applied on the X electrode and which is not applied to the ramp waveform.